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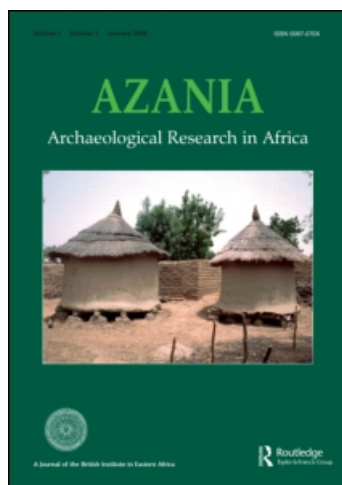
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The first migrants to Madagascar and their introduction of plants: linguistic and ethnological evidence

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The Austronesians who settled in Madagascar in the first millennium of the Christian Era were probably different from the Austronesians who reached the East African coast earlier at different times, bringing bananas, taro and yam (Blench 2010). Largely based on linguistic data, this article proposes that four plants were brought by the first Austronesians in Madagascar: rice, the greater yam, coconut and Indian saffron. These plants helped the Austronesians to begin the process of colonising well-watered areas, cultivated both through wet and swidden agriculture. A little later, populations coming from the East African coast introduced other plants (sorghum, cowpea, Bambara pea, bananas...) that allowed them to occupy other ecosystems. At the end of the first millennium, different parts of the island were thus already inhabited, on the coasts and in the Highlands, and cultural blendings were already underway. The continuation of migrations from Southeast Asia, from the East African coast and from India in the second millennium AD brought increasing complexity in the cultural blendings and allowed the repeated introduction of many cultivated plants.

Keywords: Austronesians; Bantu-speakers; East Africa; Madagascar; agriculture

Les Austronésiens qui colonisèrent Madagascar dans le courant du premier millénaire de l'ère chrétienne étaient sans doute différents des Austronésiens qui atteignirent plus tôt la côte est-africaine, à différentes périodes, apportant bananiers, taro et grande igname (Blench 2010). Fondé en grande partie sur l'analyse linguistique, cet article avance l'idée que les premiers Austronésiens à Madagascar apportèrent quatre plantes: riz, grande igname, cocotier et safran d'Inde. Ces plantes aidèrent les Austronésiens à coloniser les parties les mieux arrosées de l'île, cultivées à la fois en agriculture sèche sur brûlis et en agriculture humide. Un peu plus tard, des populations de la côte est-africaine introduisirent d'autres plantes (sorgho, voème, pois Bambara, bananiers...) qui leur permirent d'occuper d'autres écosystèmes. À la fin du premier millénaire, différentes parties de l'île étaient ainsi habitées, à la fois sur les côtes et sur les Hautes Terres, et des métissages culturels s'y produisaient déjà. La poursuite de migrations à partir de l'Asie du Sud-Est, de l'Afrique de l'Est et de l'Inde au cours du 2^e millénaire induisit une complexité croissante de ces métissages et entraîna l'introduction répétée d'un bon nombre de plantes.

The first Austronesian migrants to Madagascar

The kinship that relates the Malagasy language to languages of the South-East Barito group of Kalimantan, Indonesia, has been known for a long time (Dahl 1951). Nevertheless, researchers remain divided as to the reasons for the first migrants'

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departure towards Madagascar, as well as over the exact region from which they came and the time at which this first migration took place (Figure 1). Dahl (1978, 1991) (cf. Allibert 2007) has put forward various hypotheses that involve a Bantu substratum in Madagascar and place the arrival of 'Pre-Malagasy' around AD 400 or 700. Adelaar (2006, 2009) sees the South-East Barito-speakers as sailors in a situation of dependency *vis-à-vis* Malay shipmasters who arrived at the beginning of the formation of the Srīwijaya 'empire' in the seventh century AD. Southeast Barito languages (Maanyan, Samihim, Paku etc.) are currently spoken by communities in inner Kalimantan, but their locutors lived on the coasts in the past. If Adelaar is correct, it is hardly likely that Malay ship masters would have chosen crews of men with no seafaring experience (and accompanied by women), although the crews could also have included various specialists: blacksmiths, cooks, etc. The absence from Madagascar of Chinese pottery, the so-called 'Dusun Ware' found in large quantities at Palembang and on other Malay sites, does not encourage us, however, to consider the Malays of Srīwijaya as the organisers of the voyage(s) of South-East Barito-speakers towards the island, even though this pottery has been discovered at the Dembeni site on Mayotte in the Comoro Islands (Allibert 1998). Adelaar (1995a, 1995b) has rightly shown that Malagasy had borrowed a number of words from Malay and Javanese (see also Simon 2006), as well as from South Sulawesi languages (Mahdi 1988). While Adelaar considers that Malagasy names relating to directions in space and navigation are to be related to Malay, I have tried to show that one can actually differentiate several linguistic strata, and that some Malay terms could well have arrived after the first South-East Barito speakers (Beaujard 2003).

Moreover, for Adelaar, taking up Deschamps' (1960) idea, it is also possible that the Austronesians came to Madagascar from the East African coast (Figure 2), along with Africans (Blench 2007, 2009, 2010). But if this were so then, how can one

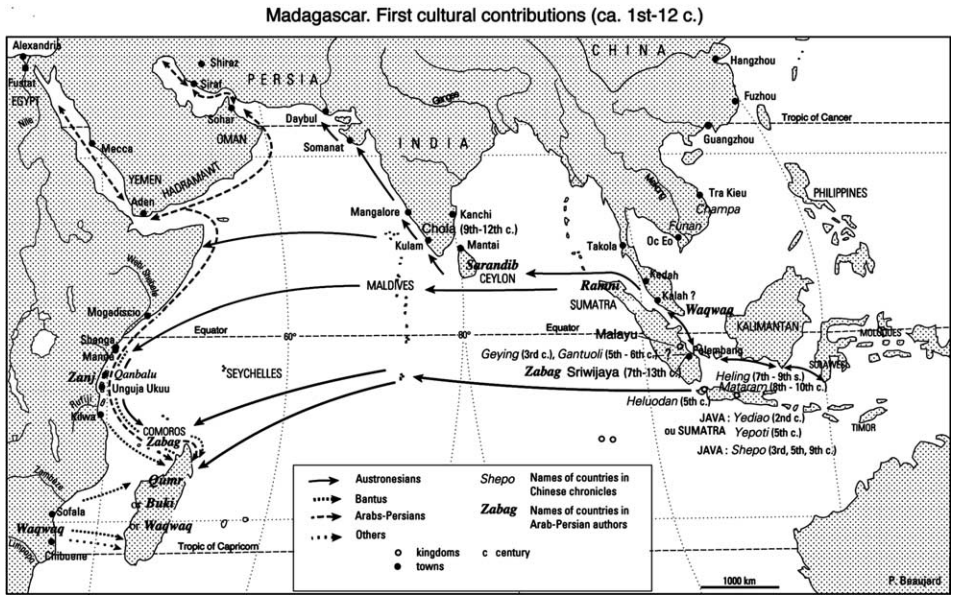


Figure 1. Madagascar: first cultural contributions (ca. first-twelfth centuries AD).



Figure 2. East Africa and Madagascar first to sixth centuries AD.

explain (in the present state of research) the absence, except in the Menarandra Valley in the far south of Madagascar (Parker Pearson *et al.* 2010), of Tana pottery (Triangular Incised Ware) pottery, which was characteristic of Swahili sites between the seventh and tenth centuries AD and is also found in the Comoros. In addition, how can one explain a number of linguistic data, such as the transfer of the term *lambo* (Malay *lembu*, ox) onto the bushpig (*Potamochoerus porcus*)? While it is true that the Malagasy language shows early contacts with Bantu languages (Dahl 1978; Adelaar 1991, 1995a; Simon 2006), these contacts could have occurred in the Comoros, at the time the Austronesians arrived or soon afterwards.

Another archaeological element that argues in favour of the direct arrival of the Pre-Malagasy on the island is the presence of pottery with *Arca* seashell-impressed designs on the oldest sites in Madagascar (Figure 3). This pottery, which ‘has little equivalent in East Africa and could well hail from South-East Asia’ (Vérin and Wright 1999, 39) is also found from the Comoros to East Africa, albeit in decreasing quantities as one goes westward (Wright 1984; Allibert 1992). Its dating supports Adelaar’s (2006, 2009) hypothesis that the arrival of the Pre-Malagasy was contemporary with Śrīwijaya, around the eighth century (see also Allibert 2007, 14). However, Burney (1987a, 1987b) documents an increase of charcoal in the sediments of some lakes in the highlands of Madagascar in the seventh/eighth centuries, an increase that seems to be linked to human activity. Moreover, in the north of Madagascar, excavations at a shelter in the Andavakoera Gorge point to periodic human occupation by people seeking forest products from as early as the fifth century AD (Dewar and Rakotovololona 1992).

For my part, I consider that it was the Malayan expansion that caused the departure from Indonesia of these Pre-Malagasy speaking a language of the South-East Barito family. This was at a time that could either be pre-Śrīwijaya or contemporary with its formation (Beaujard *in press*). They could have left from the southeastern coast of Kalimantan, as well as from southeastern Sumatra and the islands between Sumatra and Kalimantan. Indeed, it is possible that populations who spoke languages related to the South-East Barito group had settled there. Traces of this situation could have been erased afterwards by the Malay expansion as we do not really know what languages were spoken in southeastern Sumatra before then (Blust 2005). Let us call to mind that a number of stelae erected by a sovereign of Śrīwijaya in 683 and in the following years in southeastern Sumatra featured bilingual inscriptions in ancient Malay and a language related to those of the South-East Barito group (Damais 1968; Dahl 1991; Adelaar 1995a, 1995b). For Simon (2006), too, the ‘Proto-Malagasy’ lived on the southern coast of Kalimantan and the islands of the Java Sea. Starting in the fourth/fifth centuries AD, he sees them making forays onto the East African coast, settling in the Comoros and on Madagascar around the end of the seventh century. Contacts with the African littoral resulted in the incorporation of Bantu elements. This, in turn, led to the formation of a ‘Palaeo-Malagasy’ language marked, according to Simon, by a process of ‘creolisation’ with Bantu languages between the seventh and the eleventh centuries. As of the eighth century, Palaeo-Malagasy, already established in the north of Madagascar, moved down towards the southwest coast and along the east coast (Wright and Fanony 1992). The following centuries then saw the development of a process of dialect dispersion (cf. Adelaar 1991 for a critical appraisal of Simon’s ideas, first published in 1988).

Figure 3. Madagascar: ancient sites (first to ninth centuries AD) and ‘ethnic’ distribution.

The first Austronesian migrants in Madagascar, probably both men and women (Hurles *et al.* 2005; Tofanelli *et al.* 2009), undoubtedly brought with them various cultivated plants. In the absence of archaeobotanical data before the ninth/tenth centuries, we must, however, resort to other domains of research, notably linguistics, to determine which plants were introduced and when. In the present state of research, linguistics enables us to mention only four plants that came with these first Austronesians: rice (*Oryza sativa* L.), the greater yam (*Dioscorea alata* L.), the coconut tree (*Cocos nucifera* L.) and Indian saffron (*Curcuma domestica* Val.). This paper discusses and evaluates the linguistic evidence for the antiquity of these crops on Madagascar.

Rice: slash-and-burn and wet rice cultivations

The first migrants to Madagascar had probably already mastered the techniques of both wet and dry rice farming. The island's Indonesian heritage concerns both types, as can be perceived in the etymology of the agricultural vocabulary and ritual and farming practices. Rice must have been cultivated in the hot (rainy) season, both on cleared land and on the banks of marshes or rivers. We know that 'simple forms of marsh culture require no more commitment than land clearing and can provide higher yields' (Bellwood 1996, 479). Moreover, there was probably another type of rice culture for the colder season when the water level dropped. Yet swidden cultivation provides higher yields than laying out wet rice fields, if we take into consideration the quantity harvested and the hours worked. Furthermore, the first Austronesians arrived in Madagascar without cattle, and working rice fields with spades would have required an enormous amount of energy. It is possible that there was less rice farming than tuber cultivation, although various agricultural practices must have been present ever since the beginning of the colonisation.

All over Madagascar, the word *vary* refers to the rice plant, the paddy and cooked rice. It has been related to several Kalimantan languages; *bari*, meaning 'cooked rice', is found in Ngaju, Bakumpai, Katingan and Ot Danum. These terms seem to represent an innovation that took place in Kalimantan (Dahl 1991 suggested that *vary* was borrowed from the Malay *beras*, via a metathesis; for Blust and Adelaar, however, this hypothesis is less likely than that of a borrowing of the term *bari* from one of the Kalimantan languages that contained this innovation; Adelaar, pers. comm.). Nevertheless, one must also mention the existence of the term *vari* in Dravidian languages (Ottino 1975). Southworth (2005) links the words *baris* in Somali, *bari* in Ngaju and *vary* in Malagasy with the Proto-Dravidian term *var-iñc, *varici. The question of a possible influence of Dravidian languages on Kalimantan is worth raising. While evidence may seem to favour innovation in Ngaju and other languages, certain researchers, such as Mahdi (pers. comm.), suggest that the term *bari* may have a Dravidian origin. An old borrowing directly from Dravidian could have given the form *vary* in Malagasy, yet the other Malagasy terms, as well as rituals about rice, are clearly related to the Malay Archipelago and more specifically to Kalimantan (Adelaar 1996 *pace* Ottino 1975).

The first colonists certainly knew how to fashion iron tools (Dewar and Wright 1993). For land clearing, they probably used machetes, which are called *antsy* or *hantsy* by the people of Madagascar's east coast and highlands, while to the west farmers call them *mesobe*, meaning 'large knife'. *Antsy* or *hantsy* could derive from

the Sanskrit *krti-*, ‘knife’, possibly through an Indonesian intermediary, while *meso* is a recent borrowing from the Dutch *mes*, ‘knife’, also borrowed on the East African coast. To prepare and hoe the soil, small spades or shovels were used; for these, Malagasy people use the terms *fangaly*, *fangady*, *sotro*, *soro* and *antsoro*. *Fangaly*, or *fangady*, is a term inherited from Proto-Austronesian (PAN) *kaliH₂, ‘to dig’ (Tsuchida 1976). One can also link *fangaly* to the Malay word *penggali*, ‘spade’, from the root *gali*, ‘dug’. *Sotro*, ‘spade’ (Antaisaka, Zafisoro), could have been borrowed from Sulawesi languages as one finds *sodo*, ‘spade’, in Mandar and *pesodoh*, ‘spade’, in Toraja Kadar – from *suDu, ‘spoon’ in Proto-Malayo-Polynesian (PMP) (Dempwolff 1938); note too that *sotro* means ‘spoon’ in Merina, Tañala and Betsimisaraka, such that in Malagasy, as in the Austronesian languages, a series of terms means either ‘spoon’ or ‘spade’. *Misotro tany* means ‘turning over the soil’ in various dialects of the east coast of Madagascar. *Soro*, as found in the word *antsoro* (*an/soro*), which designates a spade in the southwest and the base of the assegai in the southeast of Madagascar, is a term inherited from *suDu. The assegai base was used to dig up tubers from the earth. A similar term, *soroka*, expresses the ‘action of hoeing with a spade or shovel’ (*soroka* in Merina and Tañala; *soroke* in Sakalava; *soroky* in Antaisaka), inherited from the PMP *suDuk, ‘spoon, ladle’ (Blust 2005), recalled also by the loanword *sotroky* found in Antaisaka and Zafisoro meaning ‘spoon’.

I have shown elsewhere (Beaujard 1995) that certain ceremonies held on freshly cleared ground evoke the rituals of Kalimantan land clearers in a very precise fashion; they also express ideas related to the ‘soul’ of rice, ideas that have now almost disappeared in Madagascar. For example, the Tañala ritual of primordial sowing shows parallels with a ritual found amongst the Dusun and the Ot Danum: on the chief’s field, the ‘soul of rice’ seeds were sowed into seven holes related to the seven stars of the Pleiades that play a part in rice cultivation and myths for many peoples in Indonesia (van der Weijden 1981, 98; Pelras 1987, 27; Beaujard 1995, 257). The Pleiades are linked to rice farming in different regions of Madagascar, where their name – *Zazamiadidango* in Tañala, meaning ‘children fighting over a rice mortar’ – is often connected to rice.

As is the case in various places in Indonesia (van der Weijden, 1981, 240), the Belt of Orion also comes into the rice-farming calendars of several Malagasy groups: ‘When the [Orion belt] stars are at the zenith of the sky, the month of Volambita and spring have arrived, planting time has come’ says a Tañala informer (Beaujard 1995, 257), although this is wrong as Orion actually rises in the east at dusk in November, the moment of sowing on cleared land. Amongst the Antesaka, ‘the seedlings of *tsipala* rice [the rice of the hot season] are put in a nursery (wet rice field) and transplanted at the time when the Belt of Orion rises in the east, in the evening; ripened rice is cut when the Belt sets in the west, in the evening’ (Hébert 1965, 121).

Furthermore, when the ears of rice are growing, the Malagasy people of the east coast say that the cereal is pregnant, when they mature, that it ‘gives birth’. The idea of rice as female (almost all the souls of rice have a ‘female’ character), linked with the importance of women in both dry and wet rice-farming, is also common to various Indonesian peoples. Women perform essential actions on the cultivated land, all connected to the idea of fecundity and birth (Ravololomanga 1992).

To take another example, the sister of the Tañala land ‘owner’ harvests six (or seven) ears of ripened rice, which are hung up in the granary or on the eastern wall of

the house until the next season (the following year, the rice from these ears is mixed with the seeds). This evokes the seven stalks of rice that the Dusun used to keep in their houses or rice granaries, and which hosted the 'soul of rice'. The Land Dayak of Kalimantan first harvested seven ears of rice from the central square of the field (which was sown first): these ears housed the 'souls of rice'. The following year, the seeds from these seven ears were mixed with the seeds that were to be spread on the central square of the new field. Originally, on the southeast coast of Madagascar, the six or seven ears that were harvested and kept in the house or granary probably also came from the rice sown in the 'seven' first holes (Beaujard 1995).

Finally, among the Tañala, in swidden cultivation, peasants made offerings of grilled green rice (*lango*) on a flat stone set on the stalk of the rice ears and bran – the 'cadaver' that has given birth to the grains. This ritual refers to a myth about the origin of rice, widespread throughout insular Southeast Asia (Mabuchi 1975), according to which rice was 'born' from the corpse of either a sacrificed child or one of the primordial men (here the origin of rice is linked to the origin of death). The ceremony is called the 'sweetening of rice' (*fañamamiana vary*) because rice is originally 'bitter' (*mafaiika*), a term related to the idea of death (Beaujard 1991, 374). In the northeast of Madagascar, the Betsimisaraka and the Tsimihety make an offering of a hen for the 'ceremony of the first fruits'. Hens are sacrificed at various moments in the rice cycle in swidden cultivation, both in Madagascar and in Indonesia (Beaujard 1995, 251 note 1, 257, 258 note 4).

The wet rice farming vocabulary of Malagasy originates in the Malay Archipelago, yet there are also terms of Indian origin introduced to Madagascar via there. This seems to correspond to Austronesian contributions that took place in the second millennium AD. For example, the words *farihy* ('marsh, rice field'), and *talaha*, *tahalaka* ('small dike') are of Sanskrit or Prakrit origin (Mahdi 1994, 443; de Casparis 1988, 63; Beaujard 2003). I have postulated a Dravidian origin – via a language of the Malay Archipelago – for the word *horaka* ('paddy-field, marsh') (Tamil, Kuttanad: *kulam*, 'water reservoir', Malay: *kulam*, Javanese *kulah*; Sanskrit *kūla*, 'pond, bank'). This hypothesis was criticised by Adelaar (2006), but we do find *kulak* in Malay (Favre 1875, 298), and the variant *l/r* is not uncommon in Malagasy. The rituals for wet rice farming are totally different from those for dry rice farming and imply symbolisms observed in ceremonies that involve the sacrifice of a zebu. Three substances are offered, associated with the three worlds in the universe (Sky, Earth, Waters); these rituals take into account the four cardinal points, as well as a division between high and low, linked to social division between nobility and the lowborn. They can be correlated with Indonesian influences that arrived on Madagascar between the twelfth and fifteenth centuries (Beaujard 1991, 1995).

Linguistics shows evidence of multiple introductions of rice from various origins at different times in the history of Madagascar. In the seventeenth century, the term *tentumbara* [*tentulvara*] appeared in Megiser's lexicon 'as an equivalent to the Malay term *bras*, meaning husked rice' (Domenichini-Ramiaramanana 1988, 182). The form *vara* could have been borrowed from the Banjarese Malay *baras* (of South Kalimantan) at a later date than the first migrations. We should be cautious, however, regarding the term *tentumbara*, since the word *tentu* is unknown in Malagasy, which uses *toto* to refer to 'the action of pounding'.

Curiously, the Malagasy word *fary*, which can be related to the Austronesian terms *pari* (Javanese: rice seedling) and *parei* (Maanyan: non-husked rice, rice plant)

deriving from PAN *pajey, 'rice seedling' (Blust 1984), 'paddy' (Adelaar 1995a), was transferred onto sugar cane in Madagascar, probably because Malagasy people already had the name *vary* for rice. *Fary* (< *pari) therefore corresponds to an Indonesian introduction that took place later than the first arrivals. Yet several elements indicate that the term *fary* was related to rice and not only to sugar cane in certain regions of Madagascar influenced by later Austronesian arrivals in the twelfth to fifteenth centuries. In a Tañala tale about the origin of rice, the cereal is called *farifary* and *kifarifary*, both terms deriving from *fary* (Beaujard 1991). In various regions of Madagascar, *kifarifary* and *tsimparifary* ('which resembles rice') designate weeds found in flooded fields. Froberville (1963) gives *fare* as 'millet' for the island's east coast. The old term *faria* ('a plot of wet rice field', in Imerina, which also has the word *valamparia*, 'a small dike') could derive from *fary*.

The term **pari* has probably been reintroduced several times, in relation to the arrivals of the Zafiraminia, the 'Zavaka' and the ancestors of the *andriana* Merina aristocrats in the second millennium (the term *lambo* offers a similar example of reintroduction). The name Raminia itself (Zafiraminia: 'Descendants of Raminia') could be linked to Ramni, which was used by Arab-Persian geographers to designate northern Sumatra. The word *sombily*, 'the action of sacrificing an animal', a prerogative of the Zafiraminia nobles in Anosy in the seventeenth century, probably comes from the Malay *sembilih*, a corruption of the Arabic *Bismillah*, 'In the name of God', a formula pronounced before killing a sacrificial animal. The Merina traditions of the Zafimamy retain the memory of these 'recent' Austronesian migrations (Ramilison 1951/52; Délivré 1974, 233), as well as the toponyms in Zavaka found (mainly) on the east coast of Madagascar (amongst Arab-Persian geographers, Zabag/Zabaj designated Sumatra, Java or the Comoros; Viré 1984; Hébert 1993/94) and the corpus of myths and tales collected by Ottino (1983, 1986) under the name 'the cycle of the Andriambahoaka' (see also Beaujard 1991). To these data, one can add an ensemble of elements pertaining to linguistics and the symbolism of space, time and power (Adelaar 1995a; Beaujard 1998b, 2003). I recently (Beaujard 2003) tried to synthesise data – stemming from various disciplines – on the question of Austronesian arrivals after the first millennium AD, arrivals who gave rise to the deification of both kings and rice in Madagascar.

Many terms relating to rice seem to have come from East Africa and the Comoros during periods that are hard to determine. On the west coast of Madagascar, *tsipala*, the name of a rice variety (and farming season), appears to have a Swahili origin as on the East African coast *sifala* is the name of a variety of rice from Bengal (Sacleux 1939, 802). The Swahili term *mpunga* ('rice plant, unhusked rice') is found in Imerina in the name of Andrianamponga, a king of the 'Vazimba' epoch with a traditional date in the sixteenth century. Other words are also probably of Swahili origin. One is *akotry*, referring to non-husked rice (*k'undi*, 'chaff, glume', in Swahili [*kiamu*, *kigunya*]; cf. *kundze*, 'grain' in Comorian, probably from Dravidian languages as one finds *kudi* in Kui and *kūli* in Konda, meaning 'rice grain with its husks'). Another word is *ampombo*, 'rice bran' (KiMrima: *pumba*, 'bran'; Mambwe: *malpumbu*, ditto; in Biisa, Lala, Lemba: *chilpumbu*, 'sorghum panicle whose grains have been removed' [Dahl 1978]). On a more local level, the term *mele* is found on the west Malagasy coast, coming from the Comorian *mele*, *maele*, 'rice', possibly connected with the Tamil word *nel*, 'rice, paddy'. Hébert (2000, n.d.) has suggested a plausible East African origin for still other terms. One is *vary*

manga, mentioned by Flacourt (2007) in the form *varemenghe* in the Anosy region of Madagascar in the seventeenth century. Another is *vary rojo* for a variety of rice, a term known in northern Madagascar and the highlands (relating *rojo* to *ruzz*, 'rice' in Arabic, we find *rozy*, 'rice', in the secret Anakara speech [Beaujard 1998b, 117]). Flacourt (2007) gave the name of another variety called *varehondre* (*vary hondry*), which can be connected with *konde*, meaning 'planted field' in Swahili (or to *k'undi*, 'chaff, glume'). The terms *ampango*, 'rice crust' and *ampangoro* 'rice cooked so that all the water evaporates' are also of Bantu origin: cf. KiZezuru *pangu*, 'sharing out cooked relish', *pangura*, 'divide into parts' (Hannan 1987, 508). Summarising, Simon (2006, 274) writes that 'A large part of the vocabulary about rice is Bantu: *mololo*, *akotry*, *mongo*, *ampongo*, and West and Central East [Malagasy] *ampombo*, *ampango*, *ampangoro*'.

Conversely, it is possible that the Swahili term *wali*, 'cooked rice', displays an Austronesian influence in East Africa, which could have come from Madagascar or directly from the Malay Archipelago. However, in this case Nurse and Hinnebusch (1993, 647) have reconstructed **wali* in Proto-Sabaki (< **gàdi* in Proto-Bantu), which gives rise to the terms *wali*, *wari*, *kagari* etc. They have also noted an affinity of both term and meaning with India. Furthermore, as is the case on the East African coast, rice grain forms the basis of the Malagasy weight system; the Malagasy *vary*, the weight of one grain of rice, the value of which amounted to 1/720th of a piastre, corresponds to the Swahili *wari* (in KiPemba) (Sacleux 1939, 1014, 1017; Hébert n.d.).

Moreover, terms relating to techniques used in swidden cultivation are also of East African origin: *trematrema*, for example, which refers to a one to three year old slashed-and-burnt field in the Northeast Betsimisaraka country, comes from the Swahili word *tema*, 'to cut', *tematema*, 'to slash, to chop', or from the Comorian *rema*, meaning the same (although *savoka*, referring to an older regrowth of the forest, is of Austronesian origin; Beaujard 1998a, 635). As another example, in Tañala *kirinjo* designates the platforms on piles which peasants are perched on in wait for the birds they hunt while the rice is ripening. This term can be paralleled with the Swahili *kilingo* (in the Southern KiMvita dialect), 'a platform erected on four piles or in a tree by the watchman of a field when he hunts birds'.

All these African terms show evidence of the relations between Madagascar and Africa spanning the eighth to nineteenth centuries. We can suspect a later introduction for some of these terms, connected to the dispersal of Comorian and East African slaves on the Malagasy coasts in the early 1800s, but some may be earlier.

The greater yam

Apart from, or along with rice, the greater yam (*Dioscorea alata* L.) was probably a major crop amongst the ancient Malagasy (Raison 1992). It was grown in a more or less extensive fashion on cleared hilly land, or intensively by digging holes that were then partly filled with manure. This technique, which made it possible to obtain yams of a very large size, could have been introduced (or re-invented?) on the island after the first arrivals, possibly in the thirteenth to fifteenth centuries.

Ovy, the Malagasy name for *Dioscorea alata* and other tubers, corresponds to *ubi* in many languages of the Malay Archipelago, from the PMP **qubi*(h) (Dyen 1953).

Virtually unknown along the northern edge of the Indian Ocean, the greater yam must have been brought directly into Africa across the ocean. In the Malagasy highlands, it is called *ovibe*, ‘large yam’ or ‘great yam’. *Dioscorea esculenta* (Lour.) Burk. is another species of yam, hailing from Southeast Asia and formerly cultivated in Madagascar and in Africa. It could have arrived after *Dioscorea alata*.

In the seventeenth century, the French writer de Flacourt (2007) described various yams in the Anosy region of Madagascar. The *ovy fotsy* (‘white yam’) is probably *Dioscorea alata* L., and *kambary*, *kambaro* could be *Dioscorea esculenta* (Lour.) Burk., or maybe a variety of *Dioscorea alata*. Boiteau *et al.* (1997) identify *ovikambarina*, *ovikambary* (Antemoro, Antefasy, Antesaka) as a cultivar of *D. alata* L. and/or *D. bemarivensis* Jum. and H. Perrier, and a yam called *mavondro* is identified as *D. esculenta* (Lour.) Burk. According to Boiteau *et al.* (1999, volume III, 6) ‘*D. esculenta* was widely naturalised on the East coast, while *D. alata* remained dependent on men for its multiplication and cultivation’.

The term *kambara* or *kambary* was noted down in various regions on the island. The Frenchman Mayeur (1913, 41) mentioned ‘cambarres’ in Imerina in 1785, for example. One finds *kambary* in Betsimisaraka, and *kambara* in Antemoro, to designate yam. In the Betsileo area, however, *kambara* is the name for the sweet potato, a plant of American origin. The term ‘cambarre’, *kambaro*, can be related to *khamalu*, in Bengali, which designates *D. alata* L., as Perrier de la Bathie’s (1933) suggestion that *kambare* derives from *kam*, a ‘term of Indian origin’/ *arina* ‘soot’, does not explain the form *kambaro*. The arrival of the term *khamalulkambaro* is probably posterior to that of *ubilovy*.

I have pointed out that rituals noted in Anosy in the seventeenth century show the relationship between the ‘white yam’ *ovifotsy* and the royal power in this region, a relationship that refers today to eastern Indonesia and Melanesia (Beaujard 1991, 391, 1995). For the inauguration of the house of ‘Dian Tserongh’, the King ‘Dian Ramach’ gave him a present of ‘a necklace of gold grains, eighteen baskets of rice and as many of yams’. Even more interesting, ‘Dian Tserongh’ sent to Flacourt a yam of such large size ‘that two Negroes carried [it] in a *tacon* [shaft] and they were weighed down by the load’ (Flacourt 2007, 170, 199). We should note in passing that in Imerina, the cultivation practices and the symbolism linked to these tubers of power were later transferred from yam to cassava in the eighteenth century (Callet 1981, volume II, 809).

Developing the size of yams – symbols of power – evokes cultivation and ritual practices widely known in Melanesia, where ‘to try and bring one’s partner [in a ceremony] to accept a larger yam (and a bigger amount of yams) than what one has been given [...] is not an act of generosity but a way to show one’s superiority’ and strength (Kaberry 1942, 348; cf. Leenhardt 1980, 133). It seems likely that ‘Dian Tserongh’s’ delivery of ‘a yam as large as a man’s body’ to Flacourt provides evidence of the same idea. Such data raise the question of eastern influences – yet certainly not Melanesian – in the populating of Madagascar, influences that do not necessarily have to date as far back as the first migrations. Nevertheless, one can rightly ask whether the importance of yams was necessarily related to eastern Indonesia. In the first millennium and even later, some regions of western Indonesia might have retained certain cultural traits that are now only found in eastern Indonesia. In any case, as Bonnemaïson (1996, 397) underlines, the techniques of intensive horticulture of yams ‘only exist in the cultural areas where yams are dominant’. These are so

specific that independent ‘invention’ seems less likely than a phenomenon of diffusion. Furthermore, it should also be brought to mind that southeastern Madagascar and the Betsileo region both use the term *taho* for the taro, a word that can only derive from languages spoken on Timor (Beaujard 2003).

There is also a linguistic argument to sustain the anteriority or special importance of tubers. *Vokatra*, ‘harvest, production, product of the earth’, also means ‘to dig up, unearth’; it is a loanword from the Malay *bongkar*, representing the action of drawing from the ground, of digging (Adelaar 1989) (from PMP: *buNkaR, Wolff 1974) (cf. Dez 1965, 202). On the whole, though, tubers (yam, taro and such American plants as manioc and sweet potato) are now symbolically depreciated, catalogued into a ‘black’ category (pertaining to natives and dependants) as opposed to rice, which is a ‘white’ food and one associated with kings and aristocrats. Nowadays, the culture of yams apparently does not give rise to any rituals. The decline was probably sparked off around the thirteenth/fourteenth centuries with the arrival of Indonesians who started to develop intensive wet rice farming at the same time as they developed very hierarchical royal systems. The depreciation of ‘black’ plants –linked also to Islamic influence – became the general rule, along with the deification of rice. It should be noted that, in the ninth century, Abû Zayd mentioned the plants and food of East Africa as ‘black’, listing sorghum, sugar cane and the products of certain trees (Miquel 1975, 176).

Despite everything that has just been said, the data do not indicate that the cultivation of yam was prior to that of rice in Madagascar. Yet one can think that beyond the symbolic and political construction that took place from perhaps the thirteenth century, the opposition between black and white food, bringing together diverse techniques, covers the contributions of distinct population groups over centuries. Austronesian populations of various origins may have practised various types of agriculture along the coasts and then inland, such as wet and dry rice farming and tuber production. The coexistence of several cultivation systems probably also corresponds to different subsistence strategies for the groups that were developing on the island from or by this time.

The coconut palm

The first Austronesians probably brought along coconuts (cf. Allibert 1991). The Malagasy term for the coconut palm and its nut is generally *voanio*, etymologically *voalnio* ‘fruit of the coconut palm’. *Nio* is also found for the tree (in ancient Betsimisaraka, in Antemoro and Antaisaka) from PMP *niuR, ‘coconut palm’. The appellation of the coconut palm, and probably the plant itself, seem to have come directly from the Malay Archipelago and coconut palms have been present on both the east and west coasts of Madagascar since at least the first contacts with Europeans in the sixteenth century.

Other terms introduced more ‘recently’ refer to the plant, its fruit and its derived products. In the north of Madagascar, for example, the coconut is called *dafo*; one also notes *kamba* (Antankaraña) to designate coconut fibres. *Dafo* is identical to the Swahili term *dafu*, ‘fresh coconut that you drink, which is full of water and whose meat as yet is only white jelly’. The term probably derives from the Bengali *dab*, meaning ‘unripe coconut’ (Sacleux 1939, 160). Related to *dafo* are *madrafo*, *majafo* in Vezo, for the ‘fresh coconut which is drunk, whose water is still abundant and very

sweet and whose meat is still in the form of a paste that one scrapes after drinking the water'. *Kijavo* in the Malagasy of Mayotte and *sijavo* in Antankaraña, as well as *hijavu* in Comorian, are also related to the previous terms (Gueunier, pers. comm.).

Moreover, in the north of Madagascar, *trembo* is the name of a wine made from tapping sap from the inflorescence of coconut palms. It derives from the Comorian *trembo*, 'the coconut sap extracted by slicing the inflorescence; a sweet or fermented palm wine' (in Swahili, *tembo*; Ahmed-Chamanga 1992, 214) (*tembo* in northern Malagasy also designates sperm and the world over sperm has been related to the juice of certain plants). One wonders nevertheless whether the Swahili term could not derive from the Malay *tebu*, 'sugar cane', thus revealing an ancient Austronesian influence on the East African coast.

The term *kamba*, 'rope', is probably a fairly recent introduction in the north of Madagascar, since it has not given rise to the fricativisation $k > h$ as observed in older loanwords. One finds *kamba* in Swahili, meaning 'rope', *kenbâr* in Arabic, a rope made from coconut fibres. Ancient Malagasy probably used coconut fibres for their ships in the same fashion as sailors did throughout the Indian Ocean. Yet the techniques for making sewn boats have been lost, except – to a certain extent – in the southeast until the nineteenth century. Indeed, Grandidier and Grandidier (1928) mentioned sewn boats amongst the Rabakara of Farafangana.

Indian saffron

Indian saffron (*Curcuma domestica* Val. of the family Zingiberaceae) was introduced in Madagascar at a very early stage, by Austronesians. Its Malagasy name *tamotamo*, known throughout the island, probably derives from the Banjar Malay *tamo*, 'wild ginger' (Malay *temu*, possibly borrowed from Javanese; Mahdi, pers. comm.). This is the generic term for *Curcuma* sp. and related plants (Adelaar 1989). Dempwolff (1938) reconstructed the term **tamu*, **temu* at the PMP level, for a condiment plant. Yet Wolff (1994, 521) does not think these are reconstructible proto-forms. One can reconstruct **kunij*, 'turmeric', from which has derived, in Betsimisaraka, *honitra*, a plant used as red dye. Indian saffron is used as condiment on the Malagasy island, as is the case in Southeast Asia. It was also used for dyeing (to dye threads in yellow, and in green when mixed with indigo and lemon juice), and mainly in the medical and religious domain (turmeric is a protective plant, linked to the earth). Locally, in both Sakalava and Antankaraña, one can find the terms *gingisy* and *gingiza*, probably from the Arab *gezo*, meaning 'turmeric' in Oman.

Amongst the plants that arrived with the first migrants, I have not retained the bottle gourd (*Lagenaria siceraria* [Molina] Standl). The term *voatavo* is used sometimes to name it in Madagascar, derived from PMP **tabu*, 'a container to draw water' (Dempwolff 1938), but only in part of the island. I do not consider, either, that *Hibiscus tiliaceus* L. (Malvaceae family) came with the first migrants. Here again, the term *varo*, a loanword from the Malay *baru*, is only known in certain regions (on the east coast). This term arrived – possibly with the plant – at an undetermined time. The Malays expanded the area of this tree used for its fibres and wood by planting it. In Madagascar, it was used for rope making.

Later arrivals and first cultural blendings

Austronesians, the experts on agriculture associating rice and yam in humid tropical ecosystems, first developed the wettest regions of the island (the north and east coasts), and soon afterwards part of the highlands. Yet the time when they arrived in Imerina remains subject to debate. *Cannabis* pollen has been found in sediments dated c. 2200 B.P. at Lake Tritrivakely and around AD 500 at Lake Kavitaha, while there is evidence of a subsequent increase in the frequency of charcoal particles at both sites, in the eighth century and after AD 600 respectively (Burney 1987a, 1987b, 1987c; Burney *et al.* 2004; cf. Gasse and van Campo 1998). Hemp (a plant of Indian origin) could have been introduced by sailors and human presence is thus certainly possible in the highlands by around AD 500 (Burney 1987a). The presence of hemp in both Itasy and Vakinankaratra during the sixth and seventh centuries prompts one to think of a connection with human presence, but we can also consider the possible dispersion of hemp seeds by birds from Africa to Madagascar, while not forgetting that hemp produces much pollen and that this can be found in sediments even where the plant itself is hardly represented in the vegetation (Dewar, pers. comm.).

There is also, as yet, no evidence linking early human presence to Austronesian speakers, and Blench (2010) has argued that African hunter-gatherers may have settled in the southwest of Madagascar at the end of the first millennium BC, while recent genetic research shows the possibility of 'a Pre-Austronesian expansion' in the island (Ricaud *et al.* 2009). Objects uncovered in archaeological excavations do not bring proof that an 'Indonesian culture' existed in Madagascar in the first millennium AD and 'the predominance of the Malagasy language and the obviously important contributions of Indonesians in the island's genetic pool have as yet no equivalent in the pre-historical material culture' (Dewar 1995, 315). Just as the dates remain uncertain, the (east or northwestern) routes that the first Austronesians followed from the coast towards the highlands also remain to be discovered.

Moreover, at an early stage, some Bantu-speaking migrants occupied other ecosystems, clearing land in drier regions of the western Malagasy coast. They brought with them African species suited to the conditions in these zones: sorghum (*Sorghum bicolor*) and two legumes, the cowpea (*Vigna unguiculata* (L.) Wal.) and the Bambara pea (*Vigna subterranea* (L.) Verdc). The time when the first Bantu speakers arrived and the manner of their arrival are not known; nevertheless, the transformations of the vegetation around AD 1000 in the northwest of Madagascar could correspond to the introduction of livestock by Bantu-speaking farmers in the ninth or tenth centuries. This introduction had repercussions on the vegetation and on the subfossil fauna (Dewar 1984, 1997; Burney *et al.* 2003, 2004). The zebu was present at Dembeni (Mayotte) in the ninth century (Allibert *et al.* 1989), and at Andranosoa in Androy (southern Madagascar) in the eleventh (Rasamuel 1984). The first sign of cattle being introduced in Madagascar comes from Amparihibe, in Nosy Be, where there was a notable increase of spores from *Sporormiella* fungi around the ninth century, as well as an increase in the frequency of charcoal particles in the sediments of some lakes. There are also indications of cattle breeding in the highlands at Lake Kavitaha two centuries later (Burney *et al.* 2003, 2004).

The fact that the cowpea bears the name *voanemba* or *voaemba* all over Madagascar indicates an early introduction. Similarly, in most regions of the island,

the Bambara pea is called *voanjo*, to be related to the Proto-Bantu *-jùgú (Guthrie 1967–72). Sorghum is generally called *ampemba*, a term of Bantu origin (East Proto-Bantu: *pemba; Nurse and Hinnebusch 1993). For the cowpea, one can link *voanemba* to the Shona term *nyemba* (Hannan 1987, 946), a connection that seems to imply relations between the west coast of Madagascar and the Zambezi region. A term *nyemba* is also found in languages that are geographically close, i.e. Yao, Sena and Nyanja. As regards the Malagasy, the possibility of an Asian origin cannot be totally excluded, at least for the Antankarana form *vohemy*.

The banana could also have been brought to Madagascar along with the first Bantu-speaking settlers; the most common Malagasy name for it is *akondro*, which can be related to Swahili (KiUngudya: *kilkondo*, ‘banana’). One also finds in Comorian *nglkudu*, ‘a kind of banana’ (in KiNgazidja; Guthrie 1967–72), and *hikundru*, ‘uncut ripe banana’, although the common term for the banana plant in Comorian is *trindri*, and *sindza* (*ma-*) designates a ripe banana.

The same applies to taro, called *sonjo* or *saoña* in a large part of Madagascar, a word that can be associated to *sōnga* in KiPemba and *ncōnga* in KiGunya (Sacleux 1939). Watson (1983, 68) also provides *msanga* in the Usambara region, a term he links to an introduction from southern Arabia ‘where the plant was known as *zanj*’. In Yemen, Schweinfurth (1912) noted down the term *zanj* to designate taro, which can be related to the Arab-Persian names Zanj, Zanj designating black people on the East-African coast (cf. Portères 1960, 175), although he spelt the words *sanj* and *sang* because he transcribed the Arab letter *zâ*y as *s*. I have mentioned above that the term *taho* is also to be found in Madagascar in geographically localised areas. This term, which can be related to languages from Timor (Beaujard 2003), probably corresponds to Austronesian arrivals that took place in the second millennium AD.

Another Asian aroid probably arrived in Madagascar in the second millennium, *Alocasia macrorhizos* (L.) G. Don. In many Austronesian languages, its name derives from PAN *biRaq, *Alocasia* sp. The Malagasy name *viha*, inherited from *biRaq, applies to *Typhonodorum lindleyanum* Schott of the Araceae family, a wild marsh plant that resembles *Alocasia*. This shift shows evidence that the first Austronesians who reached Madagascar did not bring along the *Alocasia*, but that they knew this plant. The Malagasy name for *Alocasia macrorhizos* is *saonjom-biha*, or *saombia*, ‘taro-*viha*’, a compound that confirms a later arrival of the plant. Furthermore, a variety of taro is called *saonjokira* (*saonjolbira*) in Imerina. This is a loanword from the Malay *bira*, which designates *Alocasia macrorhizos* (L.) G. Don. The compound *saonjokira* also shows the arrival of the word *bira* in Madagascar as later than that of *saonjo* or similar terms (about *v* ou *blk*; Beaujard 1998a, 14).

Amidst the Indo-Pacific crop package that Blench (2010) sees as introduced by Austronesians to the East African coast (plantains, taro, greater yam), only the greater yam belongs to the first introduced cultivated plants in Madagascar, a piece of evidence that points to separate Austronesian arrivals on the East African coast and (then) on this island. Archaeological and botanical data lead one to think that the introduction of plantains in Africa can be attributed to Austronesian migrations, which could date back to the first part of the first millennium BC (Mbida *et al.* 2001; Blench 2009; De Langhe *et al.* 2009; Perrier *et al.* 2009). De Langhe *et al.* (2009) also consider that in East Africa the first Austronesian migrants brought along plants capable of vegetative reproduction, but no rice, and that this occurred before the later Austronesian influences on Madagascar, the Comoros and East Africa.

It should also be noted in this context that a ‘wild’ banana of the type *Musa acuminata*, related to the Javanese sub-group *zebrina* and the fruit of which yields seeds, was found on the East African island of Pemba, where it must have been brought in by Austronesians at a time as yet undetermined. The Pemba banana, which resembles the *malaccensis* subspecies, behaves genetically like the *zebrina* subspecies (De Langhe, pers. comm.). A banana plant with seeds has also been reported on the northeast coast of Madagascar, near the mouth of the Lokoho River (Boiteau *et al.* 1999, volume I, 94). The name used for it, *ambihy*, was formed from *vihiy*, ‘seed’: ‘with seeds’ (cf. Banjarese and Sama Sitangkai *bigi*, ‘pip, stone’). While its introduction is certainly ‘ancient’, nothing proves that it dates back to the first arrivals. Its localised character points instead to a ‘recent’ arrival, although it was perhaps known elsewhere on Madagascar’s east coast. Indeed, a myth collected in the Tañala area mentions the chthonic deity Mbodisy (from the Arab *Iblis*, ‘devil’) sowing a banana seed and the very same day harvesting a hand of ripe bananas (Beaujard 1991, 339, 521). This banana plant may have been introduced either by Austronesians, or by Arabs/Swahili coming from the East African coast. It would be interesting to compare this Malagasy banana of the Lokoho valley with the Pemba banana.

Of the other bananas found in Madagascar, a variety called *akondro mainty* (‘black banana’) pertains to the African subgroup Mlali (AA), originating from a zone between Java and New Guinea. However, today it is no longer to be found there (Perrier *et al.* 2009). The vernacular name ‘black banana’ refers either to the plant’s estimated old age or to its rustic character. In addition, the *Musa textilis* Nee banana, hailing from the Philippines, was present in the Malagasy highlands under the name *akondro lahy* (‘male *akondro*’). This banana was grown in Imerina for the production of a valued fibre (Boiteau *et al.*, 1999, volume I, 80). Perrier de la Bathie (1933) does not mention this banana plant in his work about introduced plants and it is difficult to specify the arrival date of this *Musa*. Flacourt (2007) does, however, mention the use of a banana plant to make fabric in the highlands in what is now Betsileo land, as well as on the east coast, while Mayeur (1913) and Chapelier (1912) provide further evidence of the same.

The Austronesians who arrived on Madagascar in the second millennium AD introduced the term *fontsy*, from PMP *punti, ‘banana’. This term was first used to name the *ravinala* palm (‘traveller’s tree’, *Ravenala madagascariensis* Sonn., Strelitziaceae) on the east coast and then, in certain regions, for the banana plant (the word *akondro*, of Bantu origin, had asserted itself almost everywhere). Flacourt gave *voafontsi* as the name of the *ravinala* fruit (Allibert 1995, 199). For the east coast, Froberville (1963) nevertheless noted ‘a long and large banana’, but in Imerina, *akondro afontsy* designated a variety of banana (the expression shows the anteriority of the word *akondro*). Furthermore, the term *ontsy*, found in certain places on both the east and west coasts of Madagascar, represents a loanword from a language of South Sulawesi (Adelaar 1995a), and in all likelihood corresponds to a later arrival than that of the first migrations. Finally, the word *huti*, which designates ‘bananas cooked with their skins’ in the Shambala and Bondei languages of Tanzania, can be compared with Proto-Malayo-Polynesian *punti, ‘banana plant, banana’, and the Malagasy *fontsy* which derived from it (in these languages, *p > h) (G. Philippon, pers. comm.).

The last plant to be considered is one of African origin, but not necessarily introduced from Africa, the castor oil plant (*Ricinus communis* L.). First found in the sediments of Lake Kavitaha c. AD 1000, it is known in Madagascar under the term *tañataña* (Flacourt 2007 writes *tanhetanhe* in the seventeenth century for the Anosy region), which must be linked with the word *tangan-tangan*, found in some languages of the Philippines (Tagalog, Cebuano etc.). This term comes from PMP *t[e]aN-an, 'hand', and refers to the shape of the leaves, which are in the form of a hand. In Betsimisaraka and Merina, we find *tanatanamanga*, *tanantanamanga*, '*tañataña* of the Manga', which seems to refer to a (re)introduction through Swahili and/or Arab people (on the term *manga*, already found in *vary manga*, see Hébert 2000). African animals (such as the tortoise *Kinixys belliana* and the helmeted guineafowl *Numida meleagris*) were perhaps also introduced at that time (Raselimanana and Vences 2003; Walsh 2007). In the north of Madagascar, Bantu speakers and Arab-Persians mixed with the Malagasy who had already settled there in an early phase of *métissage* that had probably begun previously in the Comoros. At the end of the first millennium AD, thanks to all the plants and techniques then available to farmers, human activity extended to all the regions of the island. The continuation of migrations, from Southeast Asia, the East African coast and India in the second millennium then brought increasing complexity to these cultural blendings and allowed the repeated introduction of some cultivated plants.

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